

REMARKS

Drawing Objections:

The drawings were objected to under 37 CFR 1.83(a) as not showing every feature of the invention specified in the claims. In view of the above amendments, which cancel the objectionable claims, the drawings remain unchanged.

Claim Rejections – 35 USC 112:

Claims 1-16 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is believed that this rejection has been obviated by the above amendments to the claims.

Claim Rejections – 35 USC 103:

Claims 1-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Tsuchida** (JP 58-127246) in view of **Imazaike** (US 4,127,045).

Clearly, **Tsuchida** and **Imazaike**, whether considered alone or in combination, do not disclose or make obvious a radial slot forming a first and a second half-tooth wherein a recess in the second half-tooth is enlarged increasingly away from the tip of the tooth towards the root circle of the gear wheel such that the second half-tooth has a width that increases from base to tip and the first half-tooth has a width that decreases from base to tip in order to have rigidity greater than that of the first half-tooth. Prior claim 1 has been rewritten as new claim 17 to clarify these features of the invention. Prior claim 2 has been rewritten as new claim 18 for conformity with claim 17 upon which it is dependent.

Figure 3 of **Tsuchida** (JP 58-127246) shows a radial slot of substantially constant width, which is open towards the base of the tooth. With such a slot, the thin portion of the tooth, which has a substantially constant width, is not easily deformable. In addition, this thin portion may be easily deteriorated (permanent deformation) by repeated flexing. It is therefore also submitted that Tsuchida totally fails to suggest a tooth with a radial slot open towards the tip of the tooth and a recess that enlarges increasingly from the tip toward the base.

Imazaike (US 4,127,041) suggests a radial slot for the purpose of providing a greater deformability of the tooth. However, the two half-teeth are identical and, therefore, have the same elasticity. Accordingly, Imazaike also fails to suggest half-teeth of different rigidities as now defined in claim 17.

Sugita (JP 54-158174) is a new reference brought to the attention of the Office in the accompanying Supplemental IDS filed with this Response. Figure 2 of this document shows a slot that opens towards the tip of the tooth, which creates a thin half-tooth of substantially constant width. Such a thin half-tooth can be easily deteriorated (permanent deformation) by repeated flexing, as illustrated in the upper portion of the sketch attached hereto as Exhibit I. Thus, there also is no suggestion in Sugita of a half-tooth with a recess that enlarges increasingly from the tip toward the base.

An important feature of the tooth defined in new claim 17 is that, due to the fact that the slot recess enlarges increasingly away from the tip, it creates a thin half-tooth the width of which enlarges increasingly from the base. As a result, this thin half-tooth does not undergo any deformation but simply pivots around its narrow base, as illustrated in the lower portion of the attached sketch (Exhibit I). The risk of deterioration (permanent deformation) by repeated flexing is thus avoided.

Due to the asymmetrical structure of the teeth (which is not the case for Imazaike), the half-tooth with decreasing width from base to tip has sufficient rigidity to properly ensure transmission of significant forces, whereas the thinned half-tooth with increasing width from base to tip has an elasticity enabling it to be deformed elastically upon compression.

In view of the above, Applicant submits that it would not have been obvious to one having ordinary skill in the art to combine the teachings of Tsuchida, Imazaike and Sugita to provide a gear tooth as defined in new claim 17.

Summary:

To summarize:

- Tsuchida suggests a radial slot of constant width, open towards the base instead of toward the tip of a tooth, and does not suggest a radial slot combined with a recess having a width increasing away from the tip;
- Imazaike suggests a radial slot in a tooth, but does not suggest half-teeth of different rigidities;
- Sugita suggests a slot open towards the tip of a tooth that creates a thin half-tooth of constant width, but does not suggest a radial slot combined with a recess having a width increasing away from the tip.
- Tsuchida, Imazaike and Sugita, whether considered alone or in combination, do not disclose or make obvious a radial slot forming a first and a second half-tooth wherein a recess in the second half-tooth is enlarged increasingly away from the tip of the tooth towards the root circle of the gear wheel such that the second half-tooth has a width that increases from base to tip and the first half-tooth has a width that

decreases from base to tip in order to have rigidity greater than that of the first half-tooth.

Conclusions:


As demonstrated by the foregoing remarks, the gear wheel of new claims 17 and 18 is novel and unobvious. It is therefore believed that all of the claims as now presented are allowable under 35 U.S.C., Sections 102, 103 and 112. Accordingly, reconsideration of the application and allowance of these claims are respectfully requested. If for any reason the application is not in condition for allowance, the undersigned would appreciate a call to the telephone number given below, or an e-mail to the address given below.

DEPOSIT ACCOUNT AUTHORIZATION

It is not believed that an extension of time or any fees, other than those presented herewith, are required. However, in the event that further extensions of time are necessary, then such extensions of time are hereby petitioned under 37 CFR 1.136(a), and any additional fees required for consideration of this paper, including fees for the net addition of claims, are hereby authorized to be charged to our Deposit Account No. 080719. If any designated extension fees, or other designated fees, are not required or are in excess of the amount required, the Director is hereby authorized to credit any such overpayment to Deposit Account No. 080719.

Respectfully submitted,

Date: 5/7/2007

 5/7/2007

TOWNSEND M. BELSER, JR.

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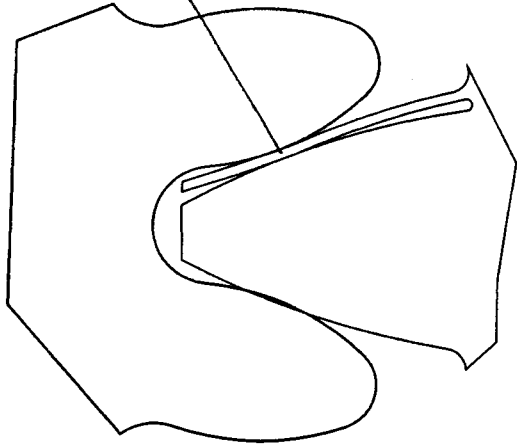
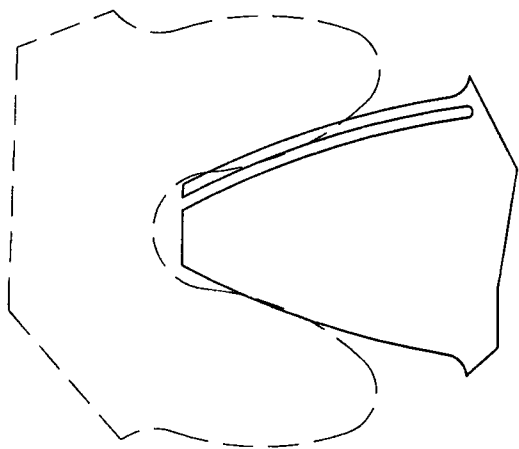
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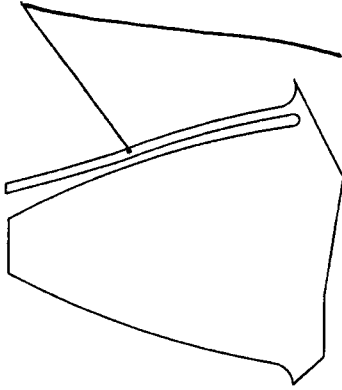
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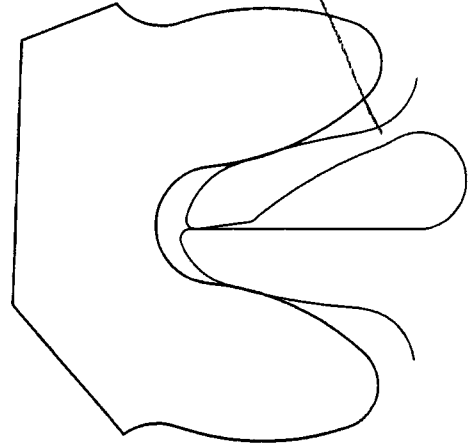
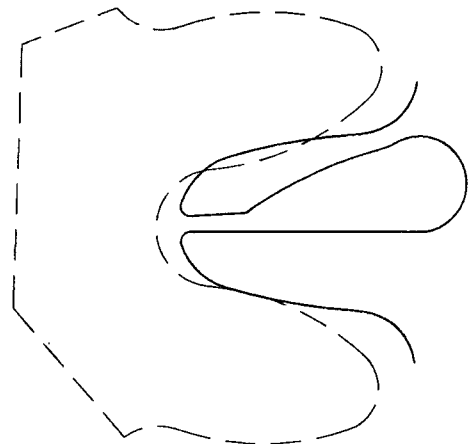
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DEFORMATION



DEFINITIVE
DETERIORATION



WEAK PART
= PIVOT

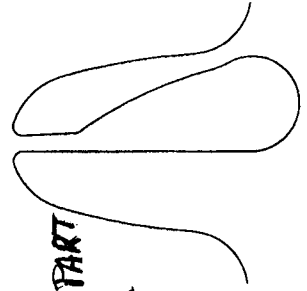


EXHIBIT I